How to Use the Maryland Statewide LiDAR Download Tool

Training

What is the MD iMAP Statewide LiDAR Download Tool?

This web application allows users to request custom downloads from LiDAR collections in Maryland.

When should I use the MD iMAP Statewide LiDAR Download Tool?

This application is designed for users to download small areas of point cloud data only.

When should I NOT use the MD iMAP Statewide LiDAR Download Tool?

This application is NOT designed for generating user-defined DEMs or DSMs, nor should it be used for large areas of interest (over 10 square miles of data).

Users looking for surface models, DEMs and derivative raster datasets should explore the REST Services Directory, and available content on the Pre-Defined DEM Downloads page.

Users looking for large areas of point cloud data should first explore available content on the MD iMAP Topography Viewer, and the Pre-Defined LAZ Downloads page.

This tool is **not** optimized for surface model generation.

Do not generate DEMs or DSMs using the **MD iMAP Statewide LiDAR Download Tool**.

By allowing the application to derive a surface model/DEM from your defined extraction of points, you are forfeiting the ability to control interpolation types and sampling methods of your output raster. Users looking to generate custom raster derivatives, such as DEMs and DSMs, should process these surface models **after** downloading classified point cloud data using one of the methods above.

In addition, it is the users' responsibility to verify collection accuracy, resolution, spatial reference, etc. prior to requesting or processing data. Detailed information can be found via the

Vendor-supplied metadata: https://imap.maryland.gov/Pages/lidar-metadata.aspx

This tutorial will provide details on the available functionality and guidelines on how to get the most out of using the **MD iMAP Statewide LiDAR Download Tool**

We'll cover a step-by-step process from reading collection metadata, selecting the dataset and defining an area of interest, to configuring extraction parameters and accessing the completed job.

Section 1: Collection Metadata

Section 2: Select Layers

Section 3: Select Export Region

Section 4: Configure Export Options

Section 5: Access Download

Section 6: Additional Resources

Collection Metadata

1. Open web browser and navigate to https://imap.maryland.gov/Pages/lidar-metadata.aspx

2. Location your desired collection

Washington, D.C.	2018	2018 Washington, D.C.	0.7 m	1m	3.2ft	2.7 cm	N/A	D.C. OCTO	Link
Wicomico (Riverine)	2011	Pocomoke and Atlantic Coastal Watersheds in Maryland	0.7 m	1m	3.2ft	N/A	N/A	Funded by NRCS Contracted through USGS	Link
Wicomico (Western)	2012	NRCS Maryland LiDAR: Somerset and Wicomico	0.7 m	1m	3.2ft	8.0 cm	N/A	Funded by NRCS Contracted through USGS	Link

3. Click on the 'Link' to access the full metadata XML:

Wicomico (Riverine)	2011	Pocomoke and Atlantic Coastal Watersheds in Maryland	0.7 m	1m	3.2ft	N/A	N/A	Funded by NRCS Contracted through USGS	Link

4. Click on the .xml link to open the XML document tree

lidar.geodata.md.gov - /metadata/Wicomico/2011/

[To Parent Directory]

9/21/2018 11:05 AM   61137 PocomokeMD_Metadata_Hydro-Enforced_DEM_012412.xml

NOTE: Metadata between two collections may vary; vendors do not all follow a similar formatting, nor do they all include the same information about their collection of data.

5. Use keywords to help identify important information about your LiDAR collection:
   On click [Ctrl] + [F] to keyword search on the XML document tree in your browser

spref – Return spatial referencing system and horizontal resolution.

```
▼<spref>
  ▼<horizsys>
    ▼<planar>
      ▼<gridsys>
          <gridsysn>Universal Transverse Mercator</gridsysn>
        ▼<utm>
            <utmzone>18</utmzone>
          ▼<transmer>
              <sfctrmer>0.999600</sfctrmer>
              <longcm>-75.000000</longcm>
              <latprjo>+00.000000</latprjo>
              <feast>500000.000000</feast>
              <fnorth>0.000000</fnorth>
            </transmer>
          </utm>
        </gridsys>
      ▼<planci>
          <plance>row and column</plance>
        ▼<coordrep>
            <absres>1.000000</absres>
            <ordres>1.000000</ordres>
          </coordrep>
          <plandu>Meters</plandu>
        </planci>
      </planar>
    ▼<geodetic>
        <horizdn>North American Datum of 1983 (NAD83, HARN)</horizdn>
        <ellips>Geodetic Reference System 80</ellips>
        <semiaxis>6378137.000000</semiaxis>
        <denflat>298.257222</denflat>
      </geodetic>
    </horizsys>
  ▼<vertdef>
    ▼<altsys>
        <altdatum>North American Vertical Datum of 1988</altdatum>
        <altres>1.000000</altres>
        <altunits>Meters</altunits>
        <altenc>Explicit elevation coordinate included with horizontal
      </altsys>
    </vertdef>
  </spref>
```

Other keywords you may find helpful!

<mdContact> - Vendor contact information

<NPS> - Nominal Point Spacing

<RMSE> - Root Mean Square Error

Select Layers

6. Once you have identified key information about your desired LiDAR collection from the vendor-supplied metadata, open web browser and navigate to

   https://lidar.geodata.md.gov:8443/ExpressZip

7. **Layers Panel:** The layers panel displays the LiDAR collections available for download. Data is organized by collection catalogs, some of these catalogs may contain multiple counties depending on the project for which they were collected.

   Turn on/off the checkbox for your desired LiDAR collection within the layers panel.

   NOTE: Only ONE layer per job. For multiple collection areas, please submit multiple jobs.

Layers	
Howard_2011	☐
MNCPPC_2018	☐
Montgomery_2013	☐
PrinceGeorges_Charles_StMarys_2014	☐
QueenAnnes_2013	☐
WashingtonDC_2014	☐
Washington_2012	☐
Wicomico_Somerset_Western_2012	☐
Wicomico_Worcester_Somerset_Riverine_2011	✔
Worcester_Coastal_2011	☐

8. You may also select their desired collection directly from the map

9. The blue dots on the map represent collection clusters; the green dots represent the collection extent centroid and will be used to select the desired collection.
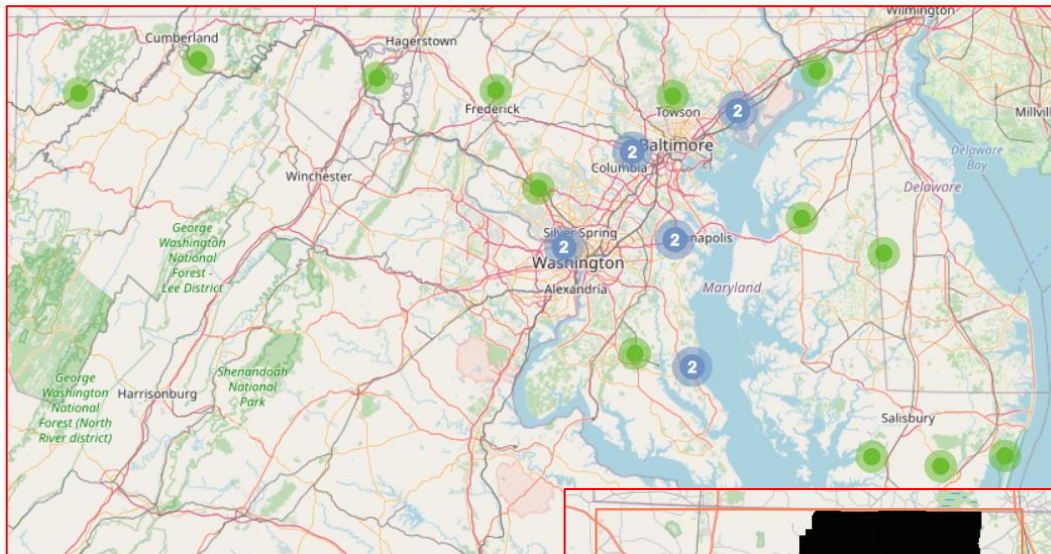
10. Zoom to your desired collection area.

    Single click the green dot to turn on the layer.

   Check the box to select the layer for export.
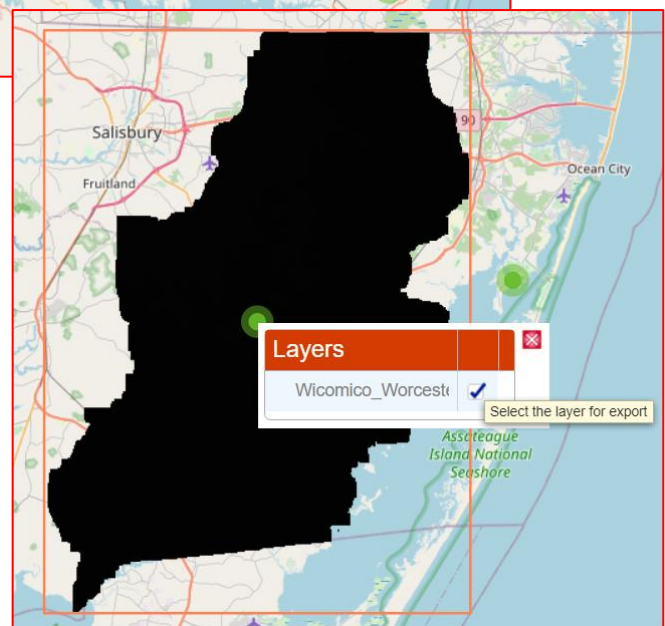
11. Click **Next ▸** to select your export region

Select Export Region

12. Start by selecting an appropriate projection from the dropdown menu

   If you have not already done so, please refer back to the [Collection Metadata](#) section of this

   document to help identify the native projection for your LiDAR collection.

   (For EPSG code lookup, recommended: https://spatialreference.org/ref/epsg/)
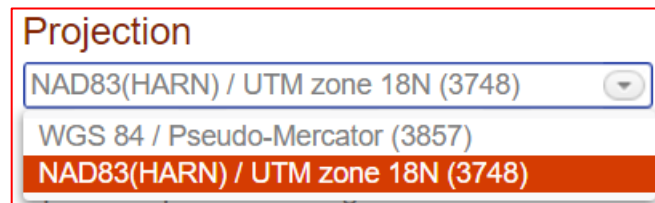
13. Using the map navigation tools, click on the 'Zoom to max extent' icon for bringing your full

   collection area into view

14. Pan and zoom to your area of extraction.

   (A good point of reference for the maximum recommended

   export extent: zoom in at least half way on the navigation tool

   zoom slider, your entire extent polygon should fit within the map

   window)

15. Using the extent polygon creation icon

Draw a polygon encompassing your area of interest.

16. Using the extent polygon edit icon

Reshape and/or move the extent polygon as needed
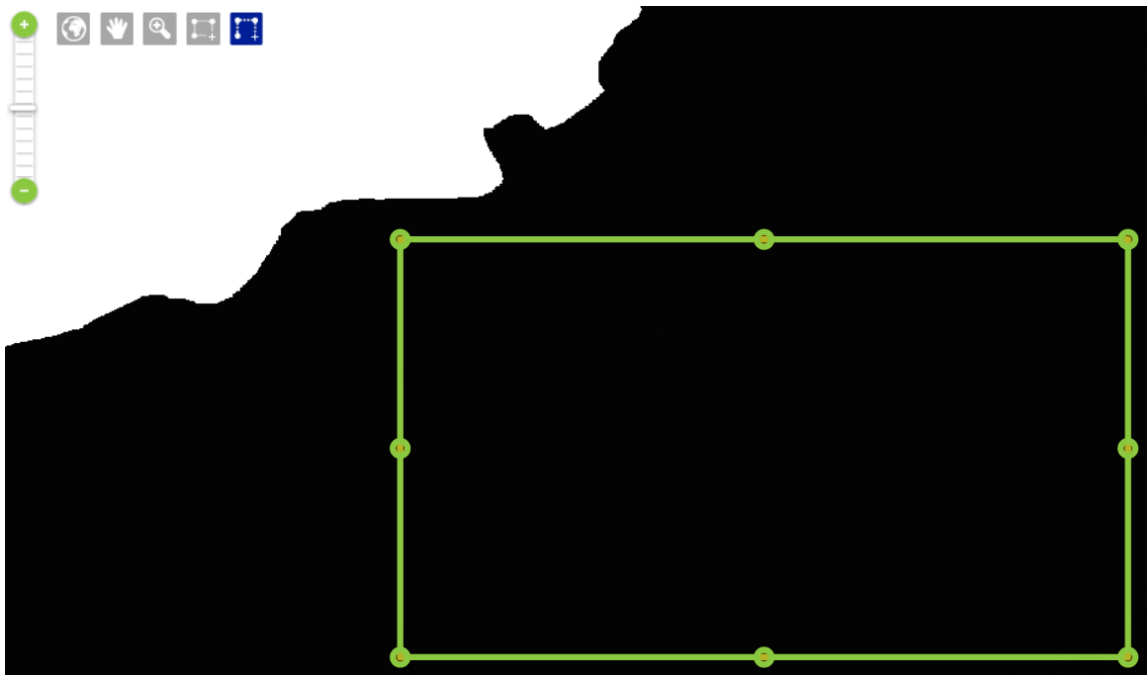
17. Users may also choose to upload a cropping shapefile for their export region

Cropping Shapefile

Upload a zip file containing all files associated with
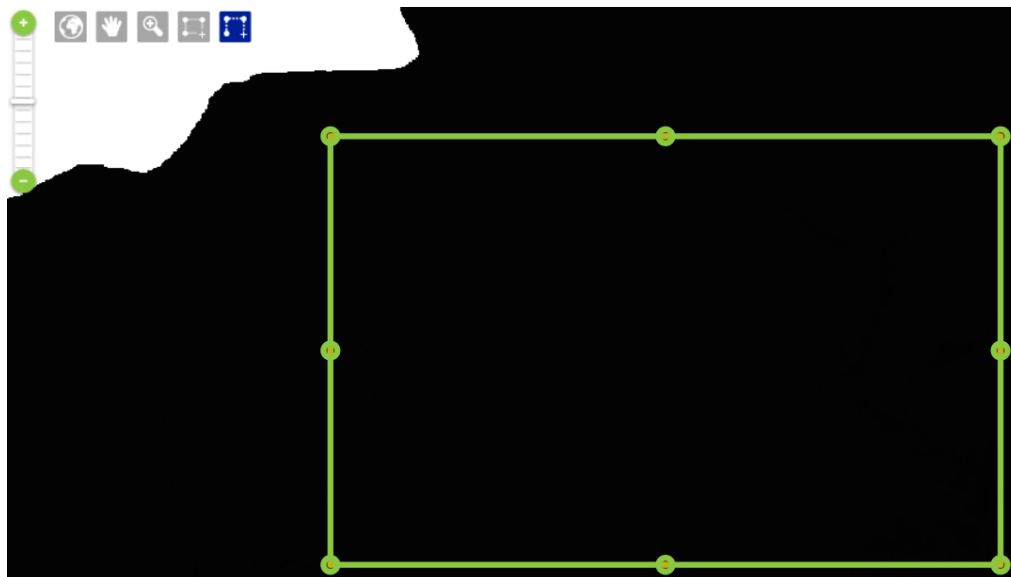your shapefile to define the export area.

[Upload...]

☑ Crop to exact bounds (non-MrSID output only)

Ensure the zipped folder name matches the name of the shapefile and it's components

(ex: TEST.zip = TEST.shp; TEST.shx; TEST.dbf; TEST.prj)
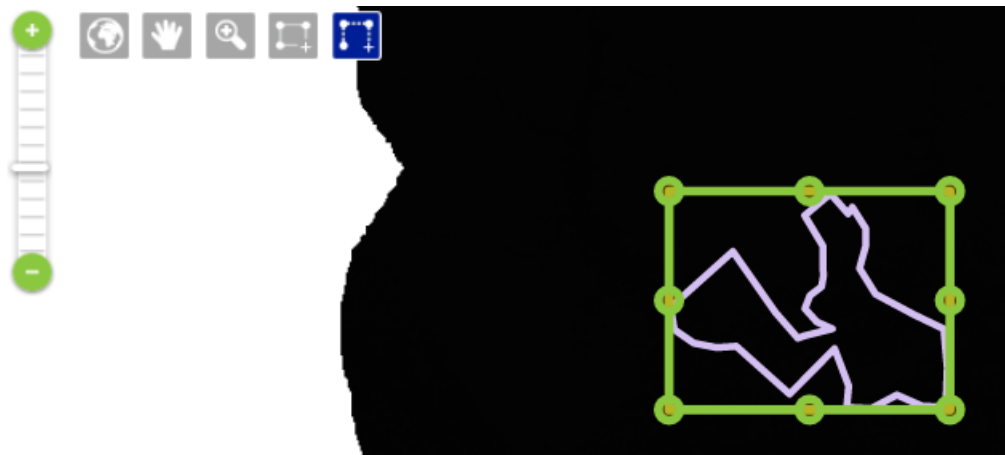
For this tutorial example, we will continue with the standard polygon extent

18. Click [**Next ▸**] to Configure Export Options

Configure Export Options

19. Enter **Job name, User name,** and **Email address**

Note how the export summary shows number of tiles and disk usage estimate.

If the disk usage estimate exceeds 5GB, users are advised to return to the [Select Export Region](#) section of this document and select a smaller area of interest for exporting.
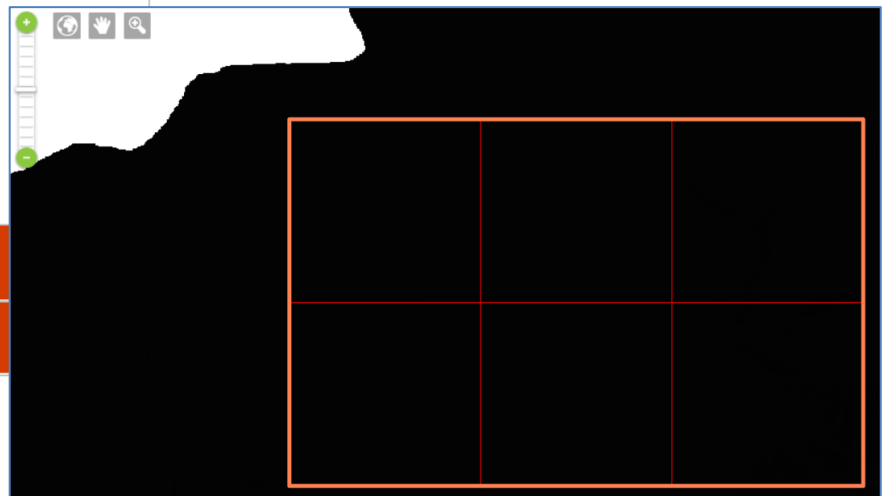
*NOTE: You will receive an email from **[ExpressZip@lidar.geodata.md.gov]**, with "Job <Defined Job Name> has finished processing" in the subject line. A link to the download will be included in the body of the email.*
Be advised, this is a public facing application. We cannot prevent other users from accessing submitted requests, downloading or removing the results of submitted requests. This includes access to the public Log URL which contains a user's email address entered during the job configuration above.

20. Click format options:

[Recommended settings]

- Packaging Format: ZIP

LiDAR > Point Cloud Options

- Output Format: LAS

- Thinning Factor: 1.0

A thinning factor other than 1.0 will result in a loss of data points and overall degradation of the download!

DEM Options

- Output Format: **None**

- All other DEM Options are not applicable as Output Format should be set to 'None. As stated on the front page of this document, this download tool is **not** designed for surface model generation, including DEMs and DSMs.

By allowing the application to derive a surface model/raster from your defined extraction of points, you are forfeiting the ability to control the interpolation types and sampling method of your output raster.

21. In addition to the interpolation type and sampling methods being undefined and inaccessible to the user, the application's default ground resolution is often inaccurate.

If you choose to renounce the recommendations set forth in this document and still choose to generate a DEM knowing these limitations,

please refer to the vendor-supplied metadata for correcting the ground resolution of your export surface prior to submitting your job! (see [Collection Metadata](#))

In this example, the default cell size was set to 0.599m. However, the metadata states that this collection supports a 1m cell resolution. Users must use extreme caution when using this tool to generate any raster byproducts.

22. Click **Submit** to send the job request

Access Download

23. Locate your download link in the email inbox for the address you provided

Ex:
> Your ExpressZip request, Job "LiDAR Module 9 Sample" completed processing at 06:48:50 on 06/16/2020. You may download your data at:
>
> https://lidar.geodata.md.gov:8443/exportdir/LiDAR Module 9 Sample/LiDAR Module 9 Sample.zip

24. Navigate to your download; extract to desired location

📦 LiDAR Module 9 Sample	6/16/2020 7:00 AM	Compressed (zipped) Folder	1,052,083 KB

LiDAR Module 9 Sample_cloud_1.las	6/16/2020 6:44 AM	LAS File	688,595 KB
LiDAR Module 9 Sample_cloud_2.las	6/16/2020 6:45 AM	LAS File	635,889 KB
LiDAR Module 9 Sample_cloud_3.las	6/16/2020 6:46 AM	LAS File	646,828 KB
LiDAR Module 9 Sample_cloud_4.las	6/16/2020 6:47 AM	LAS File	708,517 KB

25. Load your LAS files to a GIS application of your choice:
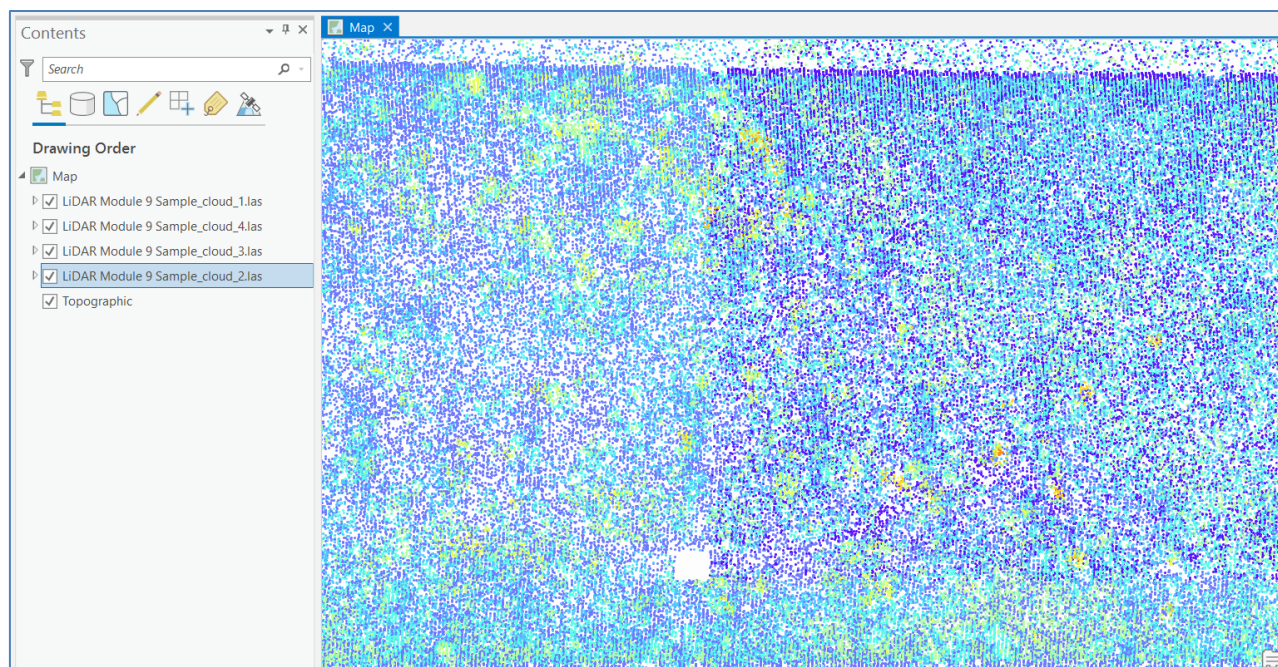
NOTE

The Job Manager is publicly accessible for users that failed to enter an email address in their export job details.

Again, this is a public facing application and therefore grants users the ability to access all jobs submitted, queued and competed via the Job Manager:

We ask that users refrain from searching, accessing or removing jobs in the queue that are not their own.

Once the download has completed, the Download URL and Log URL will update:

ADDITIONAL RESOURCES

For more information about Maryland LiDAR, please visit the Maryland LiDAR Overview page

For more information about additional training opportunities, please visit the MD iMAP Training Overview page, or contact Lisa Lowe, Senior GIS Analyst with the Maryland Department of Information Technology, Geographic Information Office at lisa.lowe@maryland.gov.

For additional MD iMAP datasets, please visit the GIS Data Catalog

For all other inquiries related to Maryland LiDAR, please contact the GIO Office at service.desk@maryland.gov.